The Power of Zero

Ron Lambkin / 5 July 2014

When I was getting my start in the work world, I achieved a significant milestone. In 1964, I got a new job, and for the first time, I got a 5 figure salary.

If you’re not quite visualizing what that is, it is 1-0-0-0-0. I had never before made over $10,000 per year.

For the rest of my career, I never did achieve the 6 figure plateau. I had a good career, but never held a job that paid $100,000 per year. One measly extra zero was beyond my reach.

Today, you may read about some entertainers, sports players and assorted others with a 7 figure income. There are a very few at 8 figures per year. But just to put it into perspective, if you are a sports team owner, it is simple arithmetic that you can hire 10 players, each making a 7 figure income, or you may choose to hire one player for an 8 figure income and still have the same payroll.

Those little zeros are powerful numbers.

To put it into another perspective, people who figure (like mathematicians, scientists, astronomers, map makers, computer nerds and others) find it a little cumbersome to always be talking about a 6-figure this and 9-figure that. Instead, they break it into 3-figure blocks. They even talk about the difference between one block and the next as an ‘order of magnitude’. A 9-figure block is an order of magnitude greater than a 6 figure block. A 9-figure income is an order of magnitude, or 1000 times, as great as a 6 figure income.

It is common with people who often work with figures in this way to use short-hand names for these orders of magnitude. They call 3 figure blocks kilo-something. A kilo is 1,000 of something.

Computer people have kilobytes, map makers have kilometers and scientists have kilograms. A byte, by the way, is approximately one character in a computer memory. So a computer file that is 1 kilobyte in size is about 10^3 (10x10x10) characters.

This short-hand system has been stretched quite a ways. You may have heard some of them tossed around, such as a thumb-drive with a capacity of 4 gigabytes (sometime shortened further to 4 gig). Just remember that orders of magnitude are huge. If your home computer has a 500 gigabyte drive, and you company has one with a 500 terabyte drive, their drive is like a thousand of yours.

Here is the table of prefixes for the very big:
kilo : 10 ^ 03 -> 1,000
mega : 10 ^ 06 -> 1,000,000
giga ; 10 ^ 09 -> 1,000,000,000
tera ; 10 ^ 12 -> 1,000,000,000,000
peta ; 10 ^ 16 -> 1,000,000,000,000,000
exa   ; 10 ^ 18 -> 1,000,000,000,000,000,000
zetta ; 10 ^ 21 -> 1,000,000,000,000,000,000,000
yotta ; 10 ^ 24 -> 1,000,000,000,000,000,000,000,000

Orders of magnitude can go the other way as well. A millimeter is, for one example, one order of magnitude smaller than a meter. A meter is a little longer than a yard. Since the lead for a typical mechanical pencil is ½ of a millimeter thick, it would take 2000 leads laid side-by-side to span one meter. Or perhaps you have heard of nano manufacturing; they are talking about parts that are measured in nano-meters. Nanometers are 2 orders of magnitude smaller than millimeters. So a nanometer if one-millionth of a micrometer.

Here is the table of the very small:
milli : 10 ^ -03 -> 0.001
micro : 10 ^ -06 -> 0.000,001
nano   : 10 ^ -09 -> 0.000,000,001
pico   : 10 ^ -12 -> 0.000,000,000,001
femto : 10 ^ -16 -> 0.000,000,000,000,001
atto   : 10 ^ -18 -> 0.000,000,000,000,000,001
zepto : 10 ^ -21 -> 0.000,000,000,000,000,000,001
yocto : 10 ^ -24 -> 0.000,000,000,000,000,000,000,001

Now that you are a little smarter, go out and get that 7 figure job. You deserve it.